

ABSTRACT

Nowadays, the technology not only used by human. For the future, a goods like a car can do the communication for sharing information/data. The implementation of technology on transportation is important to be created. Using sensors and wireless communication devices, collision avoidance systems can be created to reduce the number of accidents on the vehicle. In this final project proposal, the author will discuss the implementation and analysis of collision avoidance system prototype for the smart car.

Collision avoidance system on the smart car is designed so that in a car accident can be avoided and the number of accidents reduced to a minimum. This system applies the concept of Wireless Sensor Network (WSN), the type of wireless networking that utilizes the technology of distributed embedded systems (embedded systems) and a set of sensor nodes to pass the sensor, monitoring, data transmission, and presentation of information to the user, through communication on the internet.

The design and implementation of the prototype for the smart car collision avoidance on work by getting the distance between the car obtained from HC-SR04 Ultrasonic sensors are then processed by the Arduino to set the optimum speed car to avoid a collision. Communication between cars using wireless technology zigbee. Then, information obtained in the form of distance and speed of the car will be displayed in website that user car access it.

Maximum Xbee S2 test result is 89 meters. Distance range of Xbee S2 has an effect on the performance of the system where the further the range of Xbee S2 the performance is decreasing. The delay value of the sensor until monitoring system yields an average 0.411 seconds, while the average troughput is 641.73 bytes/s. The value of availability and reability of the system is 96.24% and 98.08%.

Keywords: Wireless Sensor Network, Collision Avoidance, Arduino Uno, Ultrasonic HC-SR04